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ABSTRACT

The concept of psychosocial maturity is reviewed in preparation for the exploration of the feasibility of constructing a scale that measures maturity. Investigation produced a preliminary 54-item scale with high reliability and moderate validity, which is appended. A factor analysis of the scale supports the a priori structure by the theoretical model of maturity. The five factors comprising the maturity scale are: self-esteem, openness to change, independence, identity, and social tolerance. Data on random samples of approximately 3,000 fifth grade students and 3,000 11th grade students, and another sample of 1,500 blacks at each grade level, form the basis for various analyses. As predicted, girls, whites, and children from higher socioeconomic backgrounds obtain higher maturity scores than boys, blacks and children from lower social classes. Differences in psychosocial maturity due to sex increase from grade 5 to grade 11; differences due to race and social class narrow over these years. Psychosocial maturity accounts for about 16% of the variance in academic achievement (standardized test scores) at grade 5, but for only 6% of the variance in achievement at grade 11. The increasing independence of academic achievement from the culturally desirable attitudes and values contained in the maturity scale is a matter of potential interest to educators. (See also TM 000 774) (Author/PR)

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JULY, 1971

TOWARD THE MEASUREMENT OF PSYCHOSOCIAL MATURITY

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The Johns Hopkins University

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INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Academic Games program has developed simulation games for use in the classroom, and is studying the processes through which games teach and evaluating the effects of games on student learning. The Social Accounts program is examining how a student's education affects his actual occupational attainment, and how education results in different vocational outcomes for blacks and whites. The Talents and Competencies program is studying the effects of educational experience on a wide range of human talents, competencies, and personal dispositions in order to formulate--and research--important educational goals other than traditional academic achievement. The School Organization program is currently concerned with the effects of student participation in social and educational decision-making, the structure of competition and cooperation, formal reward systems, ability-grouping in schools, and effects of school quality. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the Talents and Competencies program, explores the development of a scale to measure psychosocial maturity.

Acknowledgment

We wish to acknowledge the generosity of the Pennsylvania Department of Education, and specifically of the Bureau of Educational Quality Assessment, in sharing their data with us. The willingness to make data available to persons outside one's own organization is an ideal too seldom realized in the scientific community. We hope that our uses of the Pennsylvania data will be of mutual benefit to the Department of Education and to us.

We also extend our thanks to Julian Stanley, who originally brought the Pennsylvania project to our attention. His comments on this report were thoughtful and germane, as were those of John L. Holland. Keith J. Edwards was kind enough to help in setting up the factor analysis and interpreting its results. Paul Jensen gave valuable assistance in all phases of the data analysis.

Abstract

This report begins with a brief review of the concept of psychosocial maturity. The major task of the paper, however, is to explore the feasibility of constructing a scale that measures maturity. The results are encouraging: a preliminary 54-item scale with high reliability and moderate validity. A factor analysis of the scale, furthermore, supports the à priori structure which had been suggested by our theoretical model of maturity. The five factors comprising the maturity scale are: self-esteem, openness to change, independence, identity, and social tolerance.

Data on random samples of approximately 3,000 fifth grade students and 3,000 11th grade students, and another sample of 1,500 blacks at each grade level, form the basis for various analyses. As predicted, girls, whites, and children from higher socioeconomic backgrounds obtain higher maturity scores than boys, blacks and children from lower social classes. Differences in psychosocial maturity due to sex increase from grade 5 to grade 11. Differences due to race and social class narrow over these years.

Psychosocial maturity accounts for about 16% of the variance in academic achievement (standardized test scores) at grade 5, but for only 6% of the variance in achievement at grade 11. The increasing independence of academic achievement from the culturally desirable attitudes and values contained in the maturity scale is a matter of potential interest to educators.

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INTRODUCTION

It has long been a salient policy issue in public education whether, and to what extent, the schools should attempt to be socializing agents in broader spheres than the teaching of basic academic disciplines (Clausen, 1963). Clausen has argued that

> in any democratic society where social origins are associated with grossly varying cultural orientations, the attainment of responsible citizenship by the bulk of the population is largely dependent on the educational system. The assimilation of ethnic and other minorities requires that agents from outside the family provide orientation to the larger society and its values...Further, if alienation of large segments of the population is to be avoided, the moral commitment of citizens to the dominant values of the society is also requisite.
>
> (1963, pp. 154-155.)

The topics of individual development and societal requirements of the individual have been discussed from a somewhat broader perspective by Greenberger and Sørensen (1971). They have outlined a concept of psychosocial maturity which involves the individual's capacity to function effectively on his own in the "average expectable environment," his capacity to form effective social relationships, and his investment in the survival of the society. It was argued that while the schools have traditionally been organized to teach information and skills useful for effective individual functioning, they must now make a serious commitment to the development of other attributes of maturity.

Current writings in the sociology of education, while not directed explicitly toward our concept of psychosocial maturity, support the view that achieving maturity is a more vital educational outcome than achieving academic knowledge alone (Janowitz, 1969; Street, 1969). It

follows that schools should seek to develop in students aspects of maturity other than academic competence. To do so, however, they must first be able to measure maturity. Only after suitable scales are developed can schools begin to examine their curricula and organizational patterns for specific methods of developing maturity in students.

This paper begins with a brief discussion of psychosocial maturity. The main object of the paper is to describe the development of a preliminary maturity scale and to determine some of the major correlates of psychosocial maturity.

The Nature of Psychosocial Maturity

Biological models of maturity are concerned with the development over time of structures necessary for species survival and for growth and maintenance in the modal environment. Sociological models are based on the importance of societal survival. Survival of the society is ensured by effective, stable social relationships and transmission of shared values to the young. Distinctively psychological models outline the development of structures concerning the self, relations with others, and the domain of work; and the development of an overarching system of values. Table 1, taken from Greenberger and Sørensen (1971), summarizes the main components of an interdisciplinary concept of maturity. The concept is based on a rearalysis and reworking of biological, sociological and psychological points of view.

The model presented in Table 1 describes general categories of behavior that are assumed to be culture-free. Before the concept can

Table 1

An Interdisciplinary Concept of Maturity

Effective individual functioning

information

work-related skills and motives

Effective social relationships

predictability:

consistent self-attitudes

shared values

trust

System maintenance

reproduction

investment in socialization of the young

acceptance of basic value system

---

be applied to the study of growth and development in a particular society, it is necessary to specify content for these categories that is relevant to the dominant culture(s) within that society.

The selection of desirable outcomes of socialization within a society should be limited to essential ones. Outcomes should be defined broadly whenever possible (e.g., "work skills" rather than "typing skills"). A model of psychosocial maturity should not suggest conformity to a rigid, highly specified set of criteria. In the following pages we shall examine Table 1 point by point to suggest some tentative content for the concept of maturity in our society.

Psychosocial Maturity in Our Society

Effective individual functioning refers to the minimal behaviors necessary for the functioning of an individual in isolation from others. Information refers to knowledge which is necessary for growth and maintenance in the environment. The most basic information concerns health, safety, and subsistence opportunities (chief among them, work opportunities). In a complex society such as this, specific knowledge stored in the individual and information about where to get information are both important.

Work-related skills and motives are placed in the individual survival category although they also contribute to system maintenance or societal survival. The issue is the individual's productivity and the referents include what we think of as tasks, jobs, and the generation of activities which are personally satisfying and sometimes socially

valued (e.g., "creative" activities). The general disposition to be productive can be assessed in terms of interest in work, ability to take a task orientation (to persevere, to value task-completion, to defer other forms of gratification), and the acquisition of work-related competencies.

The formation and maintenance of effective social relationships is another major dimension of psychosocial maturity. We propose that such relationships depend largely on mutual predictability. At first, it might seem that predictability requires only that a person's behavior be consistent over time. However, in large societies where people who do not know each other or know each other only slightly must interact, and interactions with a particular person are often non-recurrent, consistency is not a sufficient definition of predictability. Consequently, predictability also depends on the fact that people can assume or anticipate, with a high degree of certainty, the existence of specific attitudes and values in others with whom they interact.

Some specific attitudes toward the self that seem important for predictability of behavior include self-esteem; belief in one's ability to influence or control the environment; and independence, or the ability to make choices that reflect one's own beliefs, values and wishes. The assumption that these attitudes are held by others makes it possible to predict how they will act, or react, under a variety of conditions.[1] Consistency of attitudes towards self and others is probably best ensured by a stable self-concept and the internalization

[1] On the contrary, low self-regard, dependence, and belief in one's inability to control the environment make a person's behavior less predictable.

of moral standards that are compatible with those of the society. The internalization of standards and goals makes the individual's behavior less variable since it is not under the control of changing external circumstances.

Although predictability is a major factor in the stability and success of interpersonal relationships, the behavior of others is not always predictable. Even in a relationship of long duration, the same individual's behavior will show variability from time to time and under different internal and external conditions. In a relationship of short duration, there is insufficient time for individuals to test predictions about each other. When predictability is low, a relationship depends on mutual trust. Trust is the expectation that even though another person's behavior cannot be predicted with certainty, that person will not act in ways that are detrimental to one's own needs or goals.

The last major category in our model of psychosocial maturity is system maintenance, which refers to the continuation of the species and of the society. Table 1 lists three attributes which are relatively invariant from culture to culture: the desire to reproduce, investment in socialization of the young, and adherence to basic values. We will comment only on the content of the third variable and some related attitudes.

Within the context of this society, the value system that is theoretically dominant may be described as humanistic. A humanistic morality implies that the rules that govern society are made to serve social ends and are therefore both mutable over time and variable

among societies. In the humanistic tradition, the sanctity of the individual is a major shaping influence on behavior, and the spirit rather than the letter of the law is considered a more important guideline for behavior.

A humanistic morality implies certain attitudes toward others: acceptance of differences and feelings of solidarity. These attitudes are not only valued but functional. It is functional to be accepting or "tolerant" of differences among people since the composition of society is so heterogeneous with respect to national origins, religious and other beliefs, and regional customs. Similarly, effective functioning in a large and highly differentiated society requires the capacity for social solidarity. Solidarity includes feelings of identification with others and the ability to participate and cooperate with others.

One other attribute -- openness to change -- seems highly relevant to system maintenance. On first glimpse its inclusion here may seem incongruous, but its suitability may be argued on the grounds that the political structure and technical orientation of this society promote the expectation of change. Since change is anticipated and in fact occurs in many domains of life, openness to change is functional. (A social system in which change occurs frequently but in which individuals cannot accept change is not likely to survive.)

In the preceding pages we have offered a conceptual analysis of psychosocial maturity. Ideally, a theoretical analysis of desirable outcomes of socialization in this society should be supplemented with

an empirical analysis of the outcomes that do in fact occur. The question to be answered is: which attitudes and values that are theoretically relevant to psychosocial maturity actually show growth and "improvement" during the course of the major socialization period?[1] A developmental approach is logically essential to the study of a developmental process, "maturing." Furthermore, an approach which attends to developmental or over-time changes has fruitful consequences for research. It directs attention to sources of variation in maturity and permits the assessment of an individual's relative maturity at points before maturing has been "completed" (reached a plateau).

The remainder of this paper describes an empirical investigation of psychosocial maturity guided by our theoretical model. The chief purpose of this investigation is to take a first step toward construction of a scale for assessing maturity.

METHOD

Data and Subjects

Scale development was instigated by the existence of a large body of attitude and achievement data collected independently and for other purposes by the Pennsylvania State Department of Education.[2]

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[1] This period extends from childhood through early adulthood. Most developmental research focuses on childhood and adolescence, but it is clear that the growth of maturity involves family and job experiences that emerge in the post-adolescent period.

[2] Several years ago the Board of Education in Pennsylvania formulated a set of 10 goals of a "quality" education and began a still-ongoing research program to evaluate students' progress toward these goals. The goals are described briefly in Greenberger and Sørensen (1971); the goals and the purpose of the research are described more fully in Campbell, Beers, Coldiron and Hertzog (1968).

A random sample of 20,000 children at each of two grade levels -- grade 5 and 11 -- were tested. The attitude scales common to both grade levels included ones for self-concept, responsibility, social tolerance, and vocational knowledge and attitudes. Information was also collected on the parents' education and occupations.

A randomly selected subsample of approximately 3,000 children at each grade level was obtained for use in the construction of a maturity scale.

Procedure for Constructing a Maturity Scale

One hundred ninety-nine attitude items which were identical at both grade levels were examined for their theoretical relevance to psychosocial maturity. One hundred one items met the theoretical criterion and were then subjected to an empirical criterion: namely, that an increase in the frequency of favorable (mature) responses should occur from grade 5 to grade 11. Stated otherwise, responses to maturity-relevant items should differentiate older from younger children.

Responses were coded as follows. Where the responses were dichotomous (yes-no) in form, the "mature" response (decided à priori) was coded 1, the alternative 0. Where the responses were made on a 5-point scale, logical and practical considerations (i.e., the maximum differentiation between 5th and 11th graders) influenced the selection of the mature response interval. Coding procedures are described more fully in Appendix A.

For inclusion in the maturity scale, each item had to survive the dual tests of (1) theoretical relevance and (2) empirical differen-

tiation between 5th and 11th grade students of 7.5% or better.[1] Fifty-five items survived.[2,3]

It should be noted that neither of the criteria is sufficient in itself. Theories may be wrong and the empirical criterion is subject to several problems. One problem is that the differences observed between grades or age groups may not be due to true differences in psychosocial maturity. They may be due instead to differences in the composition of the populations or to historical differences in the life-span of the two groups. Also, group age differences on an item do not ensure that the same individual shows growth or improvement over time. If over-time data on the same individuals were available, it might happen that their answers at grade 5 had no bearing on their answers at grade 11. An item that "behaved" in this fashion would not reflect a systematic course of individual development or growth toward psychosocial maturity.[4]

The 55 maturity items were first placed in subscales on intuitive grounds and then a factor analysis with an orthogonal rotation to simple structure was performed (Kaiser, 1959). The purpose of the factor analysis was, in general, to explore empirically the concept of

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[1] With samples as large as ours 1% differences in endorsement frequency are statistically significant at the .05 level. Using a criterion of statistical significance could lead to meaningless differences; therefore, a 7.5% difference was arbitrarily selected as the criterion.

[2] Four-fifths of the items on the final scale yielded between-grades differences of 10% or more.

[3] A cross-validation of items meeting the 7.5% criterion is now underway.

[4] These and other technical problems are discussed in another paper in this series (Sørensen and Greenberger, 1971).

psychosocial maturity. A more specific purpose was to determine whether the theoretical concept of maturity outlined in Table 1 could be identified empirically. The analysis was done in two stages. Subsamples of 850 5th graders and 850 11th graders were selected and the potential maturity scale items were factor analyzed. The analysis was repeated, in order to validate the initial structure, on additional samples of the same size. The resulting maturity scale consists of 54 items, distributed along five factors.[1] Appendix B lists the items on the maturity scale and shows the mature response or response interval for each item. The source of each item is given in Appendix C. Further details relating to the factor analysis are presented below.

RESULTS

Psychometric Properties of the Maturity Scale

Factor Structure

The factor analysis revealed a number of differences between 5th and 11th graders in the structure and patterning of attitudes. We decided that a maturity scale should reflect the structure and patterning among the older children, who are further along in the development of psychosocial maturity.

In factor analytic studies, the number of eigenvalues greater than one is usually taken as one indication of the number of factors to retain for rotation. The same criterion (eigenvalues greater than one)

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[1] One item did not load on any factor and was omitted.

yields information about the internal consistency of attitudes. Both analyses for grade 5 yielded 19 eigenvalues greater than one; both analyses for grade 11 revealed 10 eigenvalues of this magnitude.[1]

It is also customary to consider the percentage of total variance accounted for when deciding upon the number of factors to be rotated. However, this criterion is less suitable in cases where a large number of variables enters into the factor analysis (as in this case, where 55 items are included). A more appropriate criterion involves the item communalities: i.e., the amount of individual item variance accounted for by the extraction of n, n=1, n=2, etc. factors. Ten-factor and five-factor solutions were examined for the following reasons: first, item-communalities based on a 10-factor solution were examined, since the 11th grade factor analysis produced 10 eigenvalues greater than 1; second, a 5-factor solution was explored since our intuitive grouping of items had yielded 5 subscales. Item communalities under these two conditions are shown in Appendix D.

Inspection of Appendix D reveals that the loss in item communalities in the 5-factor solution, as compared with the 10-factor solution, is not great. If we group the items along 5 factors, the average loss in item communalities for each factor is .035, .097, .054, .099, and .043, respectively. For reasons consistent with our intuitive scales and the small losses in item communalities, the 5-factor solution, containing 54

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[1]The finding that a smaller set of factors (generalized dispositions or attitudes) integrates all items on the maturity scale at grade 11 shows that attitudes become more interconnected with increasing age. A higher degree of interconnectedness among attitudes should logically be accompanied by an increase in a person's predictability. These issues are discussed further in Sørensen and Greenberger, 1971.

items, was chosen for further work with the maturity scale. Based on the content of the items having similar loadings, the factors were named self-esteem, openness to change, independence, identity, and social tolerance.[1] The first three and the last are clearly related to components of maturity that were outlined in the previous section; the fourth factor, identity, is relevant to a stable self-concept. The items and their factor loadings for grade 11 are listed in Appendix E. Factor loadings on the first factor, self-esteem, range from .38 to .70; on the second factor, openness to change, from .33 to .65; on the third factor, independence, from .39 to .64; on the fourth factor, identity, from .37 to .51; and on the fifth factor, social tolerance, from .53 to .70.

Relationships Among Subscales

After the subscales were factor analytically identified, subscale scores were formed by summing the appropriate item-scores. The intercorrelations among subscales are shown in Table 2.

Looking first at the 11th grade data, it is clear that the subscales do not measure independent traits. This is consistent with our belief that some more general attribute -- e.g. psychosocial maturity -- is related to and underlies these individual dispositions. In any event, the intercorrelations suggest the appropriateness of summing responses to the 54 items in order to obtain an overall maturity score. Examination of the 5th grade correlation matrix shows that the scales are much less highly interrelated. This result was expected, given the results

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[1]The number of items that load on each factor is, respectively, 10, 21, 7, 12, and 4.

Table 2

Intercorrelations Among Scales

	Self Esteem	Openness to Change	Independence	Social Tolerance	Identity
			11th Grade		
Self-esteem	---	.539	.630	.604	.434
Openness to Change		---	.582	.391	.345
Independence			---	.586	.612
Social Tolerance				---	.378
Identity					---
			5th Grade		
Self-esteem	---	.132	.368	.319	.171
Openness to Change		---	.116	.210	-.006
Independence			---	.321	.288
Social Tolerance				---	.083
Identity					---

of the factor analysis.

Homogeneity

The homogenieties of the 54-item scale and of the individual factor scales were estimated by means of the Kuder-Richardson formula 20 and are shown in Table 3.

KR-20 coefficients are usually a lower boundary to the reliability coefficient of a test. The homogeniety of the total maturity scale is high at grade 11 and moderate at grade 5. All subscales are quite homogeneous at grade 11, with the exception of the identity subscale, due probably to its brevity. At grade 5, independence and social tolerance are of marginally acceptable homogeniety, while the remaining subscales show a considerable amount of internal variation. These findings suggest that analyses using total maturity scores are appropriate at both grade levels, but analyses using subscale scores should be confined to the 11th grade.

Table 3

KR-20 Coefficients for Maturity Scale and Subscales

	Grade 11	Grade 5
Maturity total	.96	.81
Self-esteem	.94	.62
Openness to Change	.89	.67
Independence	.94	.71
Identity	.69	.41
Social tolerance	.94	.77

Validity

The conventional ways of establishing validity are to (1) compare the performance of a new scale with that of other measures of the same attribute; (2) relate scores to variables with which certain specific associations would be predicted; and/or (3) predict some criterion variable. Limitations of the available data constrain us to the second option. Table 4 displays the relationship of the total maturity score and individual subscale scores to responses to a number of items which are not themselves part of the maturity scale.[1] The predicted direction of association is indicated by the sign (+ or -) indicated below the item-description.

Nearly all items show sizeable correlations with the total maturity score at grade 11; they show somewhat lower correlations with subscale scores at this age level. The face validity of the items selected makes it appear sensible that the productivity-related items, 1, 2, and 4, should exhibit their highest correlations with the independence subscale; that items 3 and 5 show their strongest associations with social tolerance; and that items 6, 7 and 8 show their strongest relations with one of the two self-relevant subscales: namely, self-esteem. Overall, the identity subscale behaves in the least discriminating way. Its pattern of correlations, seen here as well as in Table 4, makes it clear that identity is related to both independence and self-esteem (especially, the former), which is entirely consistent

[1] All items chosen are theoretically relevant to psychosocial maturity but did not meet the empirical criterion of a 7.5% age-change in frequency of endorsement. While not part of the maturity scale, these items are subject to the same test-taking sets and response biases as those on the maturity scale.

Table 4

Correlation of Maturity Scale and Subscales with Selected Items[a]

Item[b]		Self-esteem	Openness to Change	Independence	Social Feeling	Identity	Maturity Total
1. Work is dull and umpleasant. -	grade 11	.266	.284	.679	.255	.406	.645
	grade 5	[.279]	[.068]	.438	.206	[.159]	.412
2. I guess everybody has to go to work sooner or later, but I don't look forward to it. -	grade 11	.280	.226	.606	.246	.416	.574
	grade 5	[.266]	[.058]	.444	.158	[.222]	.405
3. Employers should be required to hire a person if he is qualified for a job regardless of his color or religion. +	grade 11	.421	.167	.324	.556	.174	.481
	grade 5	___	___	___	___	___	___
4. Its okay to break a school rule if everyone else is breaking it. -	grade 11	.209	.161	.526	.195	.267	.467
	grade 5	[.201]	[.073]	.409	.185	[.057]	.356
5. Some religious groups should be prevented from living in certain sections of cities. -	grade 11	.354	.154	.320	.504	.186	.450
	grade 5	___	___	___	___	___	___
6. Someone always has to tell me what to do. -	grade 11	.475	.090	.264	.275	.209	.381
	grade 5	[.446]	[.038]	.223	.172	[.114]	.320
7. I don't care what happens to me. -	grade 11	.432	.087	.222	.276	.209	.356
	grade 5	[.456]	[.064]	.272	.217	[.115]	.370
8. I often wish I were someone else. -	grade 11	.359	.044	.216	.300	.191	.320
	grade 5	[.290]	[-.002]	.156	.134	[.133]	.219
9. The type of teacher I like best outlines the problem in a general way, but leaves it up to you to decide what is really needed and how to go about doing it. +	grade 11	.165	.097	.160	.173	.102	.209
	grade 5	___	___	___	___	___	___

[a]All correlations above .031 are significant at p .05 or better (one-tailed test).

[b]A blank (___) indicates the items were not administered as part of the grade 5 testing. A bracketed figure indicates that the homogeniety of the subscale is below an acceptable level.

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with Erikson's (1968) conceptualization.

As would be expected, the lower degree of homogeniety of the maturity scale, and especially the subscales, reduces the correlations observed at grade 5. Nonetheless, where items were taken by 5th grade respondents, their relations to subscale scores follow those reported above for 11th graders. (To summarize: the independence and self-esteem subscales get some validational support at the 5th grade level; these subscales, and in addition, social tolerance, get support at grade 11.)

We may also treat as part of the scale's validity its discrimination of younger from older children. Since one of the criteria for the selection of individual items was an age difference in the frequency of endorsing the theoretically mature response, it is of course impossible that the total score or subscale scores should not show the expected age differences. Table 5 displays the means and standard deviations at grades 5 and 11. (Appendix F shows for each item the percent of children who give mature responses at grade 5 and at grade 11; and the between-grades difference in percent mature responses.)

The mean difference for the total maturity scale is highly significant. The inadequate reliability of the identity, self-esteem, and change subscales at grade 5 makes it unwise to interpret age differences. However, it is clear that the remaining subscales differentiate 5th from 11th graders: the social tolerance subscale differentiates these groups although the scale has only a narrow range of possible scores (0-7); while the longer independence scale produces the greatest differentiation.

Table 5

Means and Standard Deviations for

Maturity Total and Subscale Scores

	Grade	Mean	Standard Deviation	t
Maturity Total	11	39.38	12.95	29.8, $p < .001$
	5	30.97	7.76	
Self-esteem	11	7.70	3.10	14.6, $p < .001$
	5	6.67	2.17	
Openness to Change	11	7.58	3.72	18.9, $p < .001$
	5	5.96	2.70	
Independence	11	16.27	6.03	29.4, $p < .001$
	5	12.27	4.06	
Identity	11	2.37	1.39	21.0, $p < .001$
	5	1.65	1.18	
Social Tolerance	11	5.53	2.20	19.2, $p < .001$
	5	4.43	2.15	

Substantive Findings

In this section we shall discuss the relations between maturity scores and three demographic variables, sex, race, and social class; and between maturity and academic achievement. On the grounds that psychosocial maturity should increase as a function of stronger and more consistent socialization pressures, we predicted that girls, whites, and children from higher socioeconomic status would obtain higher maturity scores than boys, blacks, and children from the lower social classes. The prediction concerning achievement is for a low positive association. The reasoning is as follows. In general, training for academic achievement is largely unrelated to training for the kinds of personal and social development implicit in the maturity scale. However, variations in the capacity to learn culturally approved social behaviors may reflect in small part variations in more generalized learning capacities. Also, certain of the maturity scale dimensions (e.g., self-esteem, independence) tap dispositions that have been found in other research to be conducive to good academic achievement.

Findings are reported for the total maturity score only, since maturity -- a general trait -- is the concept of interest. The subscales were derived and briefly examined chiefly to identify the components of the maturity score.[1]

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[1] In foregoing a discussion of the separate subscales for discussion of the total score, we are doing what is done with many multidimensional variables: e.g., I. Q.

In the Tables which follow, the reader should concentrate on within-grade differences. Between-grade differences are also shown, but their interpretation is awkward. A proper interpretation requires taking into account (1) the observed *t*'s; (2) the different reliability of the maturity scale at the two age levels (or of subscale scores, if these had been presented); and the true differences in scores due to the independent variables.[1]

Sex

Higher scores on psychosocial maturity imply a stronger commitment to the cultural norms. Parsons (1951) maintains that sex roles in our society emphasize a differential commitment to the norms, the female having greater responsibility for pattern maintenance and social integration. Similarly, researchers have variously described women as more conforming to norms set by others (e.g., Crutchfield, 1963) and more responsible (Gough, 1956-1960).

Becker (1964) relates the "typical findings of better socialization of girls than boys" to the greater nurturance and discipline they experience in the family. Table 6 confirms the expectation that girls should score higher on psychosocial maturity than boys.

It is interesting to note that sex differences appear to increase in magnitude between the pre-adolescent and mid-adolescent periods (5th

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[1]For example, the lower the reliability of scores, the lower the *t* will be for the same true mean difference. Consequently, a low *t* at grade 5 may reflect *either* no difference in the dependent variable due to the independent variable; *or* a considerable true difference which has been obscured by a large error variance. Stated otherwise: a high *t* at grade 5 is to be believed; a low *t* is at least suspect. This and related problems are discussed in more detail in Sørensen and Greenberger (1971).

Table 6

Sex Differences in Maturity

		Mean	Standard Deviation	t
Grade 11	Girls (1295)	41.66	11.93	8.42, $p < .001$
	Boys (1299)	37.50	13.33	
Grade 5	Girls (1404)	31.27	7.74	1.98, $p < .05$
	Boys (1452)	30.68	7.79	
All	Girls (2699)	36.26	9.75	8.64, $p < .001$
	Boys (2751)	33.90	10.41	

and 11th grade). Bearing in mind the caution suggested in comparing *t*'s between age groups, it seems that the interval between age 11 and age 17 is one in which girls are subject to special pressure to become "what the society wants"; *i.e.*, to take on (or *in*) the values and attitudes that are desired. Not many years later, these girls will become the chief socializers of the next generation.

Race

Higher scores on psychosocial maturity are assumed to reflect stronger and more consistent socialization efforts. We expect blacks to score lower on maturity than whites in light of the more frequent fragmentation of black families (Moynihan, 1965), value differences between black and white cultures (Deutsch, Katz, and Jensen, 1968), and probable differences in the social class composition of the black and white samples, with resulting differences in socialization practices (Hyman, 1966).

The random sample of approximately 3,000 students at each grade level used in all other aspects of this research did not yield a large enough number of blacks to test the hypothesis.[1] Consequently, we obtained the total black sample, consisting of 1194 youngsters in grade 11 and 1276 in grade 5. Table 7 lists the means and standard deviations for this sample, using the total maturity score.

Maturity scores rise significantly between grades 5 and 11, as they do for the random or 95% white sample. Comparison of blacks and whites

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[1]The samples contained only 5% blacks.

Table 7

Means and Standard Deviations for Maturity Total:

Black Sample[a]

	Mean	Standard Deviation
Grade 11	38.53 [39.38]	9.94 [12.95]
Grade 5	26.75 [30.97]	6.87 [7.76]

$t = 33.33, p < .001$

[a]Means and standard deviations for the White sample have been bracketed for ease of comparison, although these figures have been given previously in Table 5.

suggests that black youngsters are less psychosocially mature at grade 5 than white children, but that the gap between the races closes almost entirely over the course of the next six school years.[1]

On first thought, it seems reasonable to infer that since school is the one experience blacks and whites have in common between age 11 and age 17, it must be the formal or informal aspects of the school experience which level out racial differences. Another explanation, however, may be the differential dropout rates -- by grade 11, more blacks have left school than whites. If this is the case, it is likely that those black youngsters who remain in school are more mature (better socialized with respect to values prevalent in the dominant culture).[2]

Social Class

Social class differences in child-rearing practices are based on different value orientations and produce different behavioral outcomes in children (Hoffman and Hoffman, 1964). One major difference in values is the middle class emphasis on self-direction, compared to the working class stress on conformity to external prescriptions. The warmth and permissiveness which are more characteristic of middle class parents have repeatedly been found to facilitate the growth of sociable and independent children (Hoffman and Hoffman, 1964). These and similar considerations led us to anticipate that children whose family is better

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[1]Racial differences in psychosocial maturity are explored more fully in Starr, Greenberger, Campbell, Sørensen and O'Connor, 1971.

[2]This possibility cannot be examined with figures from the current data since the 5th and 11th grade data involve two different populations.

described as middle class (rather than working class) will obtain higher maturity scores.

Data were available on parents' education and occupation. Since the relations with psychosocial maturity were virtually the same regardless of whether the mother's or father's background was considered the independent variable, we will confine our presentation of data to the father's education and occupation.[1]

Education was dichotomized to indicate whether the father had obtained a high school diploma or not; occupation was dichotomized to yield blue collar and white collar categories.[2] Tables 8 and 9 show the means and standard deviations of the total maturity score in relation to two indices of social class.

Social class differences, as these are reflected by educational and occupational status, occur consistently and in the expected direction at both grade levels. Measured by either father's occupation or father's education, class differences narrow over the course of the school years. This finding is supported when alternative ways of indexing social class are used:

Father's education was sorted into finer categories (some college, college, and post-college; high school graduate; some high school; and

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[1]A problem with the variable mother's occupation, of course, is that a great many cases must be discarded because the mother does not work. A quite unrepresentative sample then remains. The mean maturity score of children whose mothers do not work was found to fall between the means for children of blue and white collar mothers.

[2]Blue collar consists of craftsmen, operatives, service workers and laborers. White collar consists of professional, technical and kindred workers, and sales workers.

Table 8

Father's Education and Child's Maturity Score

		Mean	Standard Deviation	t
Grade 11	High school diploma or more (1171)	44.01	6.81	3.93, $p < .001$
	Some high school or less (682)	42.69	7.06	
Grade 5	High school diploma or more (1620)	32.63	7.64	11.87, $p < .001$
	Some high school or less (898)	29.04	7.06	

Table 9

Father's Occupation and Child's Maturity Score

		Mean	Standard Deviation	t
Grade 11	White collar (748)	44.07	6.99	4.46, $p < .001$
	Blue collar (1280)	42.58	7.70	
Grade 5	White collar (680)	33.51	8.14	8.54, $p < .001$
	Blue collar (1602)	30.43	7.25	

grade school or less). The mean maturity score of fifth graders shows a steady and substantial decline from one educational level to the next: 34.01, 31.95, 29.32, and 28.42. While the mean maturity score of eleventh graders also tends to decline, the importance of father's education is clearly smaller: 44.58, 43.83, 43.11, and 41.72. Father's occupation was recategorized as high prestige versus low prestige (on the basis of a median split of prestige scores obtained for each occupation). The same pattern of effects shown in Table 9 emerges.

The finding of decreased social class differences over time parallels the finding of decreased racial differences reported earlier.

It is tempting to attribute the closing of the class gap to the common socializing experiences provided by formal and/or informal aspects of the school.[1] Again, however, we must inquire first whether the composition of the student body is different near the end of high school from what it was at the end of elementary school, due to the "dropping out" of more children from lower socioeconomic backgrounds. If so, it could be argued that those who remain are not representative of the lower classes. The n's shown in Tables 8 and 9 indicate that there is approximately a 7% shift in occupational category resulting in more cases of white collar workers at grade 11. (The same 7% shift in educational background occurs, yielding more fathers who are high school graduates at grade 11.)[2] The observed difference in social class composition of the two grades might be larger than shown, if missing data

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[1]The greater mix of social classes found in the large community high school, compared with the smaller local elementary school, may contribute to bringing the values and attitudes of children from different backgrounds closer together.

[2]The difference in apparent social class membership is not necessarily due to a dropout phenomenon, however. It may instead be the result of a difference in the actual distribution of occupations and education in the fifth and eleventh grade cohorts.

on father's occupation and education are not randomly distributed: e.g., if "no response" is given more often by children from lower socioeconomic backgrounds.

Achievement

For reasons stated earlier, a moderate positive association between maturity scores and achievement was anticipated.

Three kinds of achievement data were available. Half the sample at each grade level took the Iowa Achievement test, while the other half took the Stanford. All students took a shorter achievement test called Level of Previous Learning (LPL), which measures verbal and quantitative skills. Appendix G contains a fuller description of the LPL.

Table 10 shows correlations of maturity with one verbal and one quantitative subtest from the Iowa and Stanford tests; and with the two subscores from LPL. (To present all subscores from the Iowa and Stanford tests would involve a great deal of redundancy, since all verbal subtests are highly intercorrelated, as are all quantitative subtests.)

It is clear from Table 10 that the hypothesis of a moderate association between variables is supported, especially at grade 11. The correlations at grade 5 are somewhat higher than expected. The relationship of psychosocial maturity to achievement quite clearly declines over the school years.[1] All differences between the 5th and 11th grade

[1]The declining correlation is not due to a constricted range of maturity scores at grade 11. Table 5 revealed wider variation in maturity at grade 11.

Table 10

Summary of Correlations Between Maturity and Academic Achievement[a]

	LPL Verbal	LPL Quantitative	Iowa[b] Verbal	Iowa[c] Quantitative	Stanford[d] Verbal	Stanford[e] Quantitative
Grade 11	.215	.237	.228	.193	.247	.238
Maturity Total						
Grade 5	.404	.436	.544	.470	.509	.437

[a]All correlations are significant at $p \leq .05$ or better.

[b]The grade 11 score is for ability to interpret literary materials; the grade 5 score is for reading.

[c]The grade 11 score is for ability to do quantitative thinking; the grade 5 score is for arithmetic.

[d]The grade 11 score is for reading; the grade 5 score is for paragraph meaning.

[e]The grade 11 score is for numerical competence; the grade 5 score is for arithmetic concepts.

correlation coefficients are significant beyond p .001. By grade 11, maturity explains less than 6% of the variance in standardized achievement tests. The stronger correlation at grade 5 may reflect the fact that high intellectual ability is conducive to the early development of psychosocial maturity, but that by grade 11 the culture has made its demands so clear that ability differences become fairly irrelevant.

DISCUSSION

This paper began with a discussion of the school as a potentially integrative force which provided a common socialization experience for youngsters from widely different family and cultural backgrounds. The declining relationship of race and social class to psychosocial maturity over the school years is consistent with the belief or hope that schools do exert an impact on the social development of children.[1] To what extent they affect children through the peer group, the teacher, or the curriculum remains to be answered. On the other hand, the fact that sex differences observable at grade 5 increase over time suggests that the school is unable to alter the effect of other socializing agents and perhaps reinforces differential expectations of the sexes.

In the preceding sections we have documented the change in psychosocial maturity over time in terms of differences in mean scores. No mention has been made of the variation of scores around the mean. It is of considerable interest, however, to note that the variation in maturity scores tends to <u>increase</u> from grade 5 to grade 11. This is

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[1] It is of course recognized that school is not the only extra-familial socialization agent children encounter between grades 5 and 11.

so for the random sample as a whole and for both boys and girls taken separately for the black sample, and for children from the lower SES backgrounds. The general pattern of increased variation in maturity scores may reflect a cumulative effect of certain socialization factors, wherein the various forces that influence the development of psychosocial maturity reinforce rather than counteract each other. With age, such an effect would lead to a greater range of scores in maturity: psychosocially, the rich get richer and the poor get poorer.[1]

Another pair of findings which received scant attention earlier deserve more notice. They are the findings that with increasing age, attitudes become more consistent (consequently, scales show higher reliability) and more interconnected (consequently, scales measuring different but not entirely independent attitudes show higher intercorrelations). These findings have several implications for an understanding of the child's cognitive development, as well as for our theory of psychosocial maturity.

An example may clarify one of the striking cognitive differences between the average 5th and 11th grade child. Respondents were asked to indicate how they would feel about sitting next to (1) a child of different skin color and (2) a child who was much poorer than they. For the fifth grader, responses to these questions are only weakly correlated, but for the eleventh grader they are highly correlated. It seems that with increasing age, youngsters operate with more general

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[1]The increased variation over time may in fact be larger than shown in this study if, as we suspect, the 11th grade sample underrepresents youngsters with extremely low maturity scores.

categories, absorbing "poorer than" and "different color from" into some higher-order structure (e.g., "people who are different from me," "people who are inferior"). It is clear from the example given that this generalizing tendency, while a sign of cognitive maturity, may have social consequences that are undesirable.

The increased consistency and interconnectedness of attitudes is, however, in accord with our theory that the psychosocially mature person is predictable. In view of the example just given, it should be stressed that predictability of attitudes is an incomplete criterion of maturity: a specific direction must be specified as well (e.g., a consistently accepting or open attitude toward people who are different from oneself.)

Practical Applications

The present scale is a first attempt to devise an instrument that evaluates psychosocial maturity. Future versions of the scale will provide broader coverage of desirable outcomes of socialization and will be based on longitudinal data. The potential practical applications of the maturity scale are numerous. The scale can be used to assess the differential effectiveness of schools in promoting the development of psychosocial maturity. It also can be used in analyzing teaching practices that are associated with growth in children's maturity.[1] The growing interest of educators in assessment that goes

[1] We have just begun a large-scale study which examines the relationship of a variety of school, community, teacher and student-body characteristics to students' psychosocial maturity.

beyond the measurement of academic skills is evidenced by this comment from a committee established to identify goals of a "quality education" for the state of Pennsylvania:

> ...the goals of education having to do with the growth of youngsters as persons and as useful members of society are just as important as the goals of conventional academic achievement.
>
> (Cited in Campbell, Beers, Coldiron and Hertzog, 1968, p. 2)

The committee went on to say that any evaluation procedure which did not assess growth in these areas as well as academic growth would be deficient as a basis for determining whether the program of any school district is educationally adequate.

The current political struggle to make schools accountable to the public for improving children's academic competence depends heavily on the existence of standardized achievement tests. The conceptualization of a non-academic area of competence, psychosocial maturity, and the creation of a scale to measure its development, could eventually lead to a broadened concept of what the schools should be accountable for.

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APPENDIX A

Determination of "Mature" Response-Interval

On 5-point scales both responses on the mature end of the scale (e.g. "always" and "most of the time, "I would like it" and "I would not mind it") were coded 1. The remaining alternatives were coded 0. If the response frequencies had been different, however, other scoring procedures might have evolved: e.g., scoring only the most extreme of the mature responses 1, or including the intermediate point in the scale ("sometimes") in the mature response interval. In all cases, a question that was not answered was scored 0.

The meaning of logical and practical considerations involved in choosing the "mature" response interval can be inferred from the way the following two fictitious items would be handled:

(1) "I steal from my neighbors."

(2) "I feel that the outcome of my life is a matter of luck."

Logically, the only psychosocially mature response to the first question is "strongly disagree," and if the differentiation this scoring produces is weak, the item must be discarded. Coding of the second item, in contrast, logically could include one or both disagree categories and possibly the "sometimes" category.

Suppose that the answer "strongly disagree" was given by 20% of 5th graders and 26% of 11th graders. Suppose the answer "slightly disagree" was given by 20% of 5th graders and 34% of 11th graders. Suppose

finally that "sometimes" was checked by 20% of 5th graders and 2% of 11th graders. The most rational decision would be to score either of the disagree responses 1, yielding a composite between-grades endorsement frequency of 40% and 60%. To include "sometimes" -- which there is no <u>logical</u> reason to consider more like a mature response than an immature one -- would obliterate the difference between 5th and 11th graders: i.e., the endorsement rates would be 60% and 62%.

APPENDIX B

Questionnaire Format and Maturity Key

The questionnaire format for the 54 items of the psychosocial maturity scale is given below. The asterisk indicates which response or responses are "mature."

DIRECTIONS: Please mark each statement in the following way: If the statement describes how you usually feel, check "Like me". If the statement does not describe how you usually feel, check "Unlike me". There are no right or wrong answers.

	Like me	Unlike me
1. Luck decides most things that happen to me.	_____	* _____
2. Someone always has to tell me what to do.	_____	* _____
3. It takes me a long time to get used to anything new.	_____	* _____
4. I'm popular with kids my own age.	* _____	_____
5. If I work hard, I can be what I want to be.	* _____	_____
6. If I stick to something long enough, I can make it work.	* _____	_____
7. If I work hard, I can get a good job.	* _____	_____
8. If I have something to say, I usually say it.	* _____	_____
9. There isn't much of a chance for a person like me to succeed in life.	_____	* _____
10. If I work at something long enough, I will succeed.	* _____	_____

SOME PEOPLE SAY THAT IN ORDER TO KEEP UP IN A FAST MOVING WORLD IT WILL BE IMPORTANT TO KEEP LEARNING AND STUDYING ALL DURING OUR LIVES. OTHER PEOPLE SAY THAT ONCE A PERSON FINISHES SCHOOL, HE SHOULD BE ABLE TO HANDLE ANYTHING THAT COMES ALONG.

DIRECTIONS: Check the one column that best describes you. If you wish to change an answer, erase completely your first mark.

DO YOU THINK YOU WILL HAVE TO KEEP LEARNING AND STUDYING (IN OR OUT OF SCHOOL) IN ORDER TO:

	It will be very important	It will be quite important	It will be somewhat important	It will not be important	I can not say
11. Make good decisions in voting.	* _____	_____	_____	_____	_____

DIRECTIONS: TRY TO PLACE YOURSELF IN THE FOLLOWING SITUATION:

BEFORE SCHOOL BEGAN ONE MORNING, YOU AND A GROUP OF CLASSMATES WERE HAVING A TALK ABOUT THE YEAR 1989 AND YOU WERE TRYING TO IMAGINE YOURSELVES GOING TO SCHOOL IN 1989. ITEMS 12 to22 ARE SOME OF YOUR CLASSMATES IDEAS.

	I accept it	I can not say	I do not accept it
12. There will be no marks and no report cards. Pupils will talk over their work with their teachers as often as they like.	* _____	_____	_____
13. Schools will be open 24 hours each day. Pupils can use the building at any time.	* _____	_____	_____
14. Pupils will work with teachers alone or in small groups.	* _____	_____	_____
15. All the latest and best reading materials will be quickly available through a computer.	* _____	_____	_____
16. There will be TV, movies, records, and tapes which pupils can use by themselves.	* _____	_____	_____

	I accept it	I can not say	I do not accept
17. Pupils will have the use of a computer for arithmetic and many other things.	*		
18. There will be quiet places to learn and study on one's own.	*		
19. To learn about the people and the language of another country, pupils will spend some time living in foreign countries.	*		
20. To learn about different people in this country, pupils will spend time living in different sections of the United States.	*		
21. Pupils will learn in factories, laboratories, hospitals, museums, theaters and offices. Pupils will visit these places if they wish to learn about them and about the people in them.	*		
22. Pupils will talk with others all over the world by way of satellite.	*		

DIRECTIONS: READ EACH STATEMENT, THINK ABOUT WHAT YOU HAVE DONE IN THE PAST IF YOU WERE EVER FACED WITH THE SITUATION AND MARK YOU ANSWER BY CHECKING THE COLUMN THAT FITS BEST. IF YOU NEVER FACED THE SITUATION, TRY TO IMAGINE WHAT YOU WOULD DO. DON'T SPEND TOO MUCH TIME ON ANY ONE ITEM.

	Always	Most of the time	Some-times	Very seldom	Never
23. I like to earn my own money when I can.	*	*			
24. A man should work and earn his own living if he can.	*	*			
25. A man should vote the same way his friends do.				*	*
26. People should not be allowed to say what they think.				*	*

DIRECTIONS: THE ITEMS BELOW ARE STATEMENTS ABOUT OCCUPATIONAL CHOICE AND WORK. OCCUPATIONAL CHOICE MEANS THE KIND OF JOB OR WORK THAT YOU THINK YOU WILL PROBABLY BE DOING WHEN YOU FINISH ALL OF YOUR SCHOOLING. IF YOU AGREE OR MOSTLY AGREE WITH THE STATEMENT, PUT A CHECK IN THE SPACE HEADED TRUE. IF YOU DISAGREE OR MOSTLY DISAGREE WITH THE STATEMENT, PUT A CHECK IN THE SPACE HEADED FALSE.

	True	False
27. I plan to follow the line of work my parents suggest.	____	* ____
28. I'm not going to worry about choosing an occupation until I'm out of school.	____	* ____
29. Your parents probably know better than anyone else which occupation you should enter.	____	* ____
30. Why try to decide on a job when the future is so uncertain.	____	* ____
31. I seldom think about the job I want to enter.	____	* ____
32. It doesn't matter which job you choose as long as it pays well.	____	* ____
33. You can't go very far wrong by following your parents' advice about which job to choose.	____	* ____
34. Whether you're interested in a particular kind of work is not as important as whether you can do it.	____	* ____
35. You get into an occupation mostly by chance.	____	* ____
36. It's who you know, not what you know, that is important in a job.	____	* ____
37. When it comes to choosing a job, I'll make up my own mind.	* ____	____
38. I have little idea of what working will be like.	____	* ____
39. Choose an occupation, then plan to enter it.	* ____	____
40. I really can't find any work that appeals to me.	____	* ____
41. Choose a job in which you can be famous.	____	* ____
42. The most important part of work is the pleasure which comes from doing it.	* ____	____
43. Why worry about choosing a job when you don't have anything to say about it.	____	* ____

	True	False
44. I don't know how to go about getting into the kind of work I want to do.	____	* ____
45. I don't know what courses I should take in school.	____	* ____
46. I know very little about the requirements of jobs.	____	* ____
47. I can't understand how some people can be so set about what they want to do.	____	* ____

DIRECTIONS: READ EACH QUESTION CAREFULLY AND DECIDE HOW YOU FEEL ABOUT IT. THERE ARE FIVE POSSIBLE ANSWERS TO CHOOSE FROM. BE SURE TO ANSWER EACH QUESTION. CHECK ONLY ONE SPACE FOR EACH QUESTION.

	I would like it	I would not mind it	I would rather not	I would dislike it	I can not say
48. How would you feel about sitting in class next to a person whose skin color is different from your own?	* ____	* ____	____	____	____
49. How would you feel about having as a best friend a person whose ideas about God are very different from your own?	* ____	* ____	____	____	____
50. How would you feel about playing on the same team with a person whose ideas about God are very different from your own?	* ____	* ____	____	____	____
51. How would you feel about sitting in class next to a person whose ideas about God are very different from your own?	* ____	* ____	____	____	____
52. How would you feel about having as best friend a person whose family is much poorer than yours?	* ____	* ____	____	____	____
53. How would you feel about playing on the same team with a person whose family is much poorer than yours?	* ____	* ____	____	____	____
54. How would you feel about sitting in class next to a person whose family is much poorer than yours?	* ____	* ____	____	____	____

APPENDIX C

Sources of Items

Item	Identification
1	Educational Testing Service
2	Self-Esteem Inventory, Stanley Coopersmith, 1967
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10	Educational Testing Service
11	Pennsylvania Department of Education
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27	Vocational Development Inventory, John O. Crites, 1969
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[1]The 54 items appear in the order listed in Appendix C.

[2]Further bibliographic information may be found under References.

Item	Identification
30	Vocational Development Inventory, John O. Crites, 1969
31	
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APPENDIX D

Item Communalities for 10-Factor and 5-Factor Solutions[1,2]

Item number	10-Factor solution	5-Factor solution
1	.26	.24
2	.39	.36
3	.33	.31
4	.29	.26
5	.65	.62
6	.53	.51
7	.64	.62
8	.30	.22
9	.59	.52
10	.70	.67
11	.26	.21
12	.28	.22
13	.17	.12
14	.39	.30
15	.49	.45
16	.57	.52
17	.39	.27
18	.50	.47
19	.59	.35
20	.85	.41
21	.48	.47
22	.33	.33

[1]Based on 11th grade data

[2]Item numbers correspond to the order in which questions appear in Appendix B.

Item number	10-Factor solution	5-Factor solution
23	.48	.36
24	.61	.56
25	.35	.31
26	.33	.28
27	.39	.33
28	.52	.50
29	.47	.43
30	.45	.43
31	.43	.42
32	.50	.48
33	.37	.25
34	.22	.17
35	.56	.51
36	.42	.38
37	.57	.53
38	.40	.36
39	.43	.36
40	.49	.46
41	.39	.36
42	.54	.49
43	.57	.56
44	.43	.36
45	.37	.35
46	.35	.30
47	.30	.27
48	.60	.59
49	.43	.34
50	.82	.66
51	.77	.62
52	.65	.53
53	.88	.80
54	.81	.73

APPENDIX E

Factor Loadings of Maturity Scale Items

Item	Factor loading
Factor name: Self-esteem	
1. If I work at something long enough, I will succeed.	.70
2. If I work hard, I can get a good job.	.67
3. If I work hard, I can be what I want to be.	.67
4. If I stick to something long enough, I can make it work.	.64
5. There isn't much of a chance for a person like me to succeed in life.	.61
6. I'm popular with kids my own age.	.47
7. Someone always has to tell me what to do.	.47
8. It takes me a long time to get used to anything new.	.43
9. If I have something to say, I usually say it.	.42
10. Luck decides most things that happen to me.	.38
Factor name: Openness to Change	
11. There will be TV, movies, records, and tapes which pupils can use by themselves.	.65
12. To learn about different people in this country, pupils will spend time living in different sections of the United States.	.62
13. Pupils will learn in factories, laboratories, hospitals, museums, theaters and offices. Pupils will visit these places if they wish to learn about them and about the people in them.	.61
14. All the latest and best reading materials will be quickly available through a computer.	.59
15. To learn about the people and the language of another country, pupils will spend some time living in foreign countries.	.56
16. There will be quiet places to learn and study on one's own.	.55

Item	Factor loading
17. Pupils will talk with others all over the world by way of satellite.	.55
18. Pupils will have the use of a computer for arithmetic and many other things.	.50
19. Pupils will work with teachers alone or in small groups.	.47
20. There will be no marks and no report cards. Pupils will talk over their work with their teachers as often as they like.	.45
21. Schools will be open 24 hours each day. Pupils can use the building at any time.	.33
22. It will be important to keep learning and studying to make good decisions in voting.	.33

Factor name: Independence

23. Why worry about choosing a job when you don't have anything to say about it.	.64
24. When it comes to choosing a job, I'll make up my own mind.	.60
25. You get into an occupation mostly by chance.	.59
26. It doesn't matter which job you choose as long as it pays well.	.58
27. Choose a job in which you can be famous.	.55
28. The most important part of work is the pleasure which comes from doing it.	.55
29. It's who you know, not what you know, that is important in a job.	.54
30. Your parents probably know better than anyone else which occupation you should enter.	.54
31. A man should work and earn his own living if he can.	.54
32. Why try to decide on a job when the future is so uncertain.	.53
33. I'm not going to worry about choosing an occupation until I'm out of school.	.52

	Item	Factor loading
34.	Choose an occupation, then plan to enter it.	.50
35.	I seldom think about the job I want to enter.	.49
36.	I plan to follow the line of work my parents suggest.	.46
37.	I really can't find any work that appeals to me.	.46
38.	You can't go very far wrong by following your parents' advice about which job to choose.	.44
39.	A man should vote the same way his friends do.	.43
40.	I have little idea of what working will be like.	.42
41.	I like to earn my own money when I can.	.41
42.	People should not be allowed to say what they think.	.38
43.	Whether you're interested in a particular kind of work is not as important as whether you can do it.	.38

Factor name: Identity

44.	I don't know how to go about getting into the kind of work I want to do.	.51
45.	I know very little about the requirements of jobs.	.41
46.	I don't know what courses I should take in school.	.40
47.	I can't understand how some people can be so set about what they want to do.	.37

Factor name: Social Tolerance

48.	How would you feel about playing on the same team with a person whose ideas about God are very different from your own?	.70
49.	How would you feel about sitting in class next to a person whose ideas about God are very different from your own?	.67
50.	How would you feel about playing on the same team with a person whose family is much poorer than yours?	.67

51.	How would you feel about sitting in class next to a person whose family is much poorer than yours?	.65
52.	How would you feel about having as best friend a person whose family is much poorer than yours?	.57
53.	How would you feel about sitting in class next to a person whose skin color is different from your own?	.53
54.	How would you feel about having as a best friend a person whose ideas about God are very different from your own?	.50

APPENDIX F

Percent of Mature Responses for Each Item at Grade 5 and Grade 11

Item No.[1]		Per cent giving mature response[2]
1.	grade 5	53.4
	grade 11	68.1
	% difference	14.7
2.	grade 5	64.3
	grade 11	77.8
	% difference	13.5
3.	grade 5	61.6
	grade 11	74.8
	% difference	13.2
4.	grade 5	57.9
	grade 11	65.5
	% difference	7.6
5.	grade 5	73.2
	grade 11	84.7
	% difference	11.5
6.	grade 5	74.9
	grade 11	82.5
	% difference	7.6
7.	grade 5	78.5
	grade 11	86.0
	% difference	7.5
8.	grade 5	56.8
	grade 11	64.7
	% difference	7.9
9.	grade 5	67.1
	grade 11	80.5
	% difference	13.4
10.	grade 5	76.3
	grade 11	84.6
	% difference	8.3
11.	grade 5	56.2
	grade 11	64.3
	% difference	8.1
12.	grade 5	30.4
	grade 11	47.9
	% difference	17.5

[1]The items appear in the order listed in Appendix B , and the mature response is indicated there.

[2]The per cent of no response for the items differs between grade 5 and grade 11 only slightly, .1 to 1.0, with grade 11 usually slightly higher. The range of no response varies among the items from 2.8 to 6.8, with a concentration in the range 3.6 to 4.7%.

Item No.		Per cent giving mature response
13.	grade 5	28.0
	grade 11	37.7
	% difference	9.7
14.	grade 5	48.8
	grade 11	65.9
	% difference	17.1
15.	grade 5	49.9
	grade 11	70.7
	% difference	20.8
16.	grade 5	66.5
	grade 11	77.1
	% difference	10.6
17.	grade 5	50.6
	grade 11	61.0
	% difference	10.4
18.	grade 5	65.4
	grade 11	78.2
	% difference	12.8
19.	grade 5	42.9
	grade 11	61.4
	% difference	18.5
20.	grade 5	45.8
	grade 11	60.7
	% difference	14.9
21.	grade 5	65.9
	grade 11	74.5
	% difference	8.6
22.	grade 5	44.4
	grade 11	56.5
	% difference	12.1
23.	grade 5	69.9
	grade 11	78.3
	% difference	8.4
24	grade 5	69.0
	grade 11	84.8
	% difference	15.8
25.	grade 5	59.3
	grade 11	75.4
	% difference	16.1

Item No.		Per cent giving mature response
26.	grade 5	50.8
	grade 11	64.2
	% difference	13.4
27.	grade 5	49.9
	grade 11	77.1
	% difference	27.2
28.	grade 5	50.2
	grade 11	80.3
	% difference	30.1
29.	grade 5	43.0
	grade 11	75.3
	% difference	32.3
30.	grade 5	53.0
	grade 11	74.5
	% difference	21.5
31.	grade 5	46.9
	grade 11	76.1
	% difference	29.2
32.	grade 5	58.9
	grade 11	78.3
	% difference	19.4
33.	grade 5	37.7
	grade 11	61.6
	% difference	23.9
34.	grade 5	44.4
	grade 11	53.9
	% difference	9.5
35.	grade 5	56.9
	grade 11	77.1
	% difference	20.2
36.	grade 5	57.4
	grade 11	73.1
	% difference	15.7
37.	grade 5	69.0
	grade 11	82.1
	% difference	13.1
38.	grade 5	47.7
	grade 11	71.1
	% difference	23.4
39.	grade 5	62.6
	grade 11	76.8
	% difference	14.2

Item No.		Per cent giving mature response
40.	grade 5	61.9
	grade 11	73.4
	% difference	11.5
41.	grade 5	51.5
	grade 11	68.4
	% difference	16.9
42.	grade 5	67.6
	grade 11	79.3
	% difference	11.7
43.	grade 5	57.5
	grade 11	79.5
	% difference	22.0
44.	grade 5	44.1
	grade 11	56.6
	% difference	12.5
45.	grade 5	44.4
	grade 11	68.3
	% difference	23.9
46.	grade 5	37.0
	grade 11	54.3
	% difference	17.3
47.	grade 5	39.8
	grade 11	58.0
	% difference	18.2
48.	grade 5	74.8
	grade 11	84.0
	% difference	9.2
49.	grade 5	51.3
	grade 11	63.4
	% difference	12.1
50.	grade 5	54.8
	grade 11	77.3
	% difference	22.5
51.	grade 5	55.9
	grade 11	77.9
	% difference	22.0
52.	grade 5	66.0
	grade 11	79.5
	% difference	13.5
53.	grade 5	71.1
	grade 11	86.5
	% difference	15.4
54.	grade 5	68.8
	grade 11	84.6
	% difference	15.8

APPENDIX G

Level of Previous Learning

A special test was devised to assess the accumulated verbal and quantitative learning for students at both the 5th and the 11th grade levels. The specifications for this test were that it was to require as little reading as possible, that the combined verbal and quantitative parts were to be administered in 30 minutes, and that the score of interest was a composite total to which the two parts contributed equally. The test is called Level of Previous Learning (LPL). There are two forms, one for each grade level. Each form is made up of 30 verbal items and 30 quantitative items. The items were selected by Educational Testing Service from their item bank. The verbal item types are analogies at both levels in the form of the following example:

CALF:COW::
(A) puppy:dog
(B) nest:bird
(C) horse:bull
(D) shell:turtle

The items for the quantitative part require a judgment of greater than, less than, or equal to, with varying degrees of mathematical sophistication needed to determine the quantities to be compared. This sophistication ranges from simple counting to solving simple equations at the 5th grade level and to knowledge of the Pythagorean theorem at the 11th grade level. An example is:

A if the part in Column A is greater,
B if the part in Column B is greater,
C if the two parts are equal.

Column A	Column B
10	9

The tests were administered for analysis of psychometric properties to a sample of 2900 students at each level. Item analysis and cluster analysis were performed. The Kuder Richardson Formula 20 (KR_{20}) reliability for the 5th grade version is .87. The mean for 5th graders is 25.48; the standard deviation is 11.51. Cluster analysis indicates considerable overlap between the verbal and the mathematical parts of the test. For a Fisher z of .08 (significant at the .05 level for 2900 cases), 13 clusters account for all items in the two sub-tests with one cluster accounting for 42 items. The 11th grade version has a KR_{20} reliability coefficient of .90. The mean for 11th graders is 26.39; the standard deviation is 13.68. For a Fisher z of .09 seven clusters include all items on the two sub-tests; one cluster contains 51 items. The correlation between the LPL and a composite of standardized achievement test scores is .85 for the 5th grade test. A similar correlation for the 11th grade form is .92.